

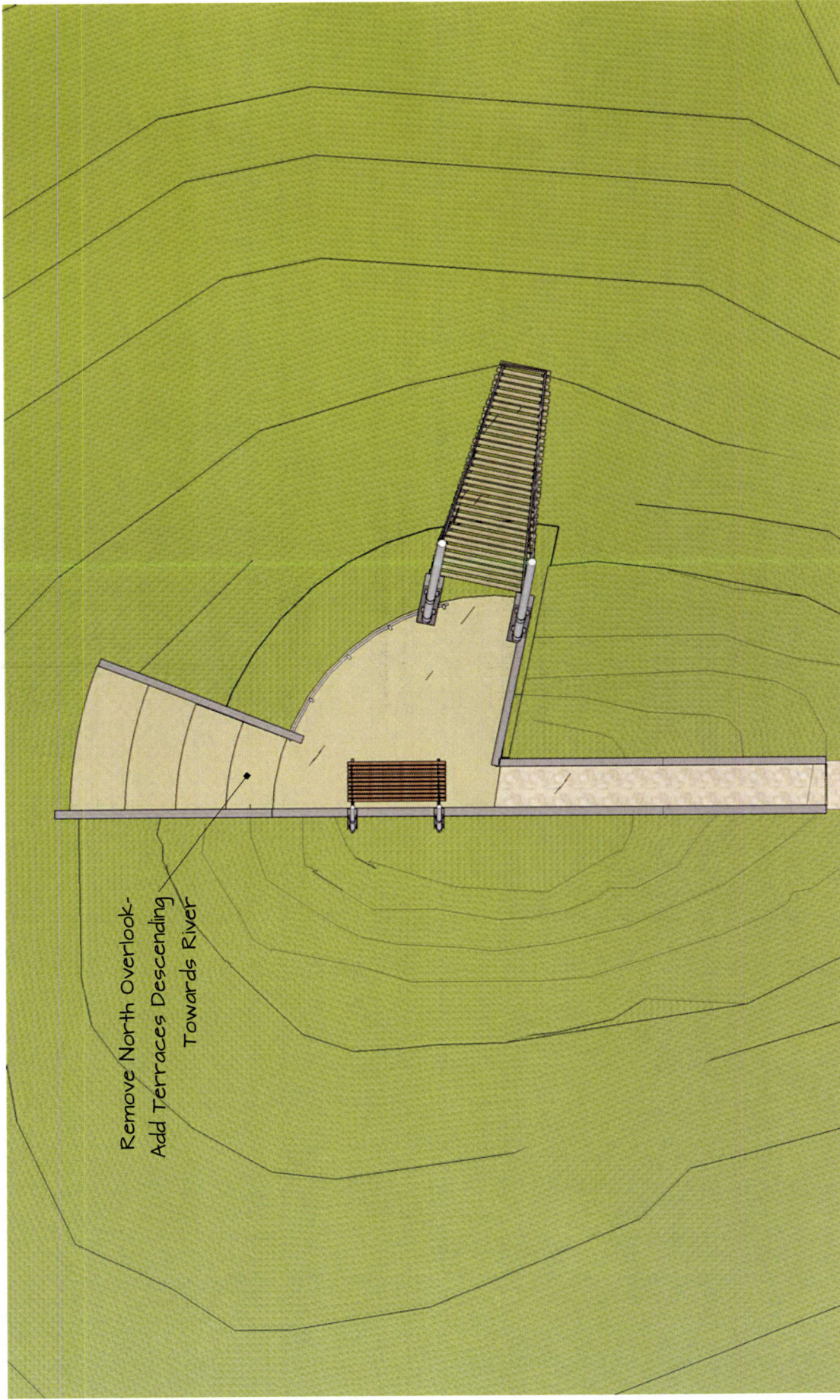


"iCON" STRUCTURE
View Looking East
not to scale

peters
newell
ARCHITECTS & PLANNERS

Big Bend Habitat Restoration - West Jordan, UT





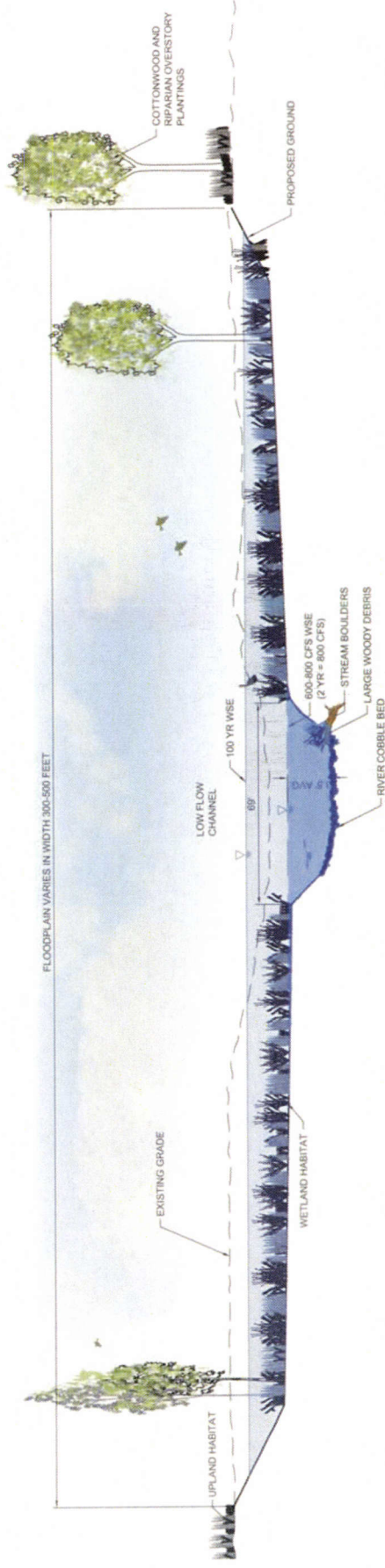
Remove North Overlook-
Add Terraces Descending
Towards River

ALTERNATE 'A' REMOVE NORTH OVERLOOK not to scale



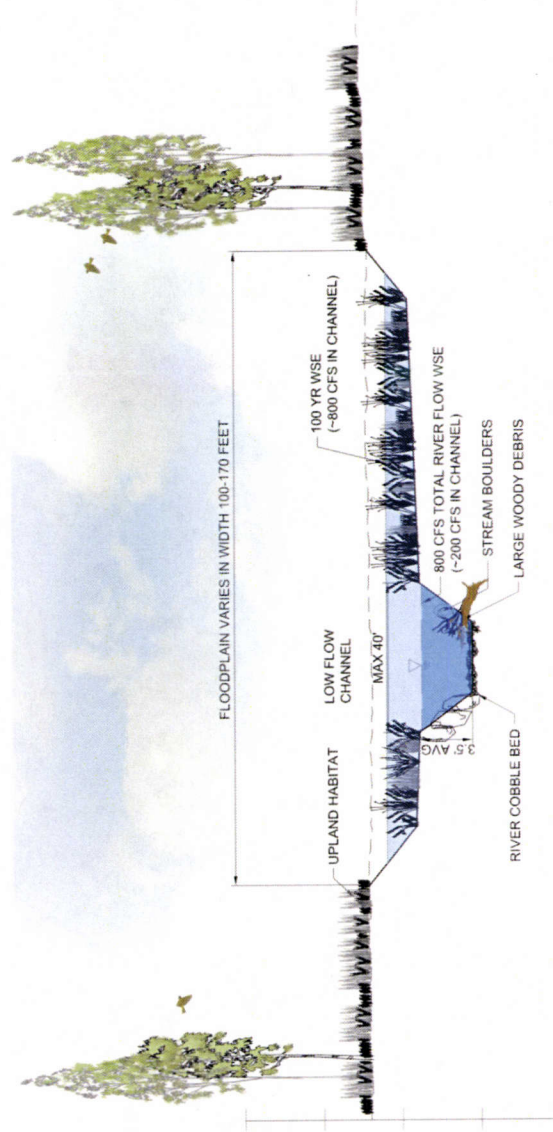
Big Bend Habitat Restoration - West Jordan, UT

Big Bend Habitat Restoration Project – Sample Cross Sections



1H:4V

High Range Alternative – Typical Channel Section

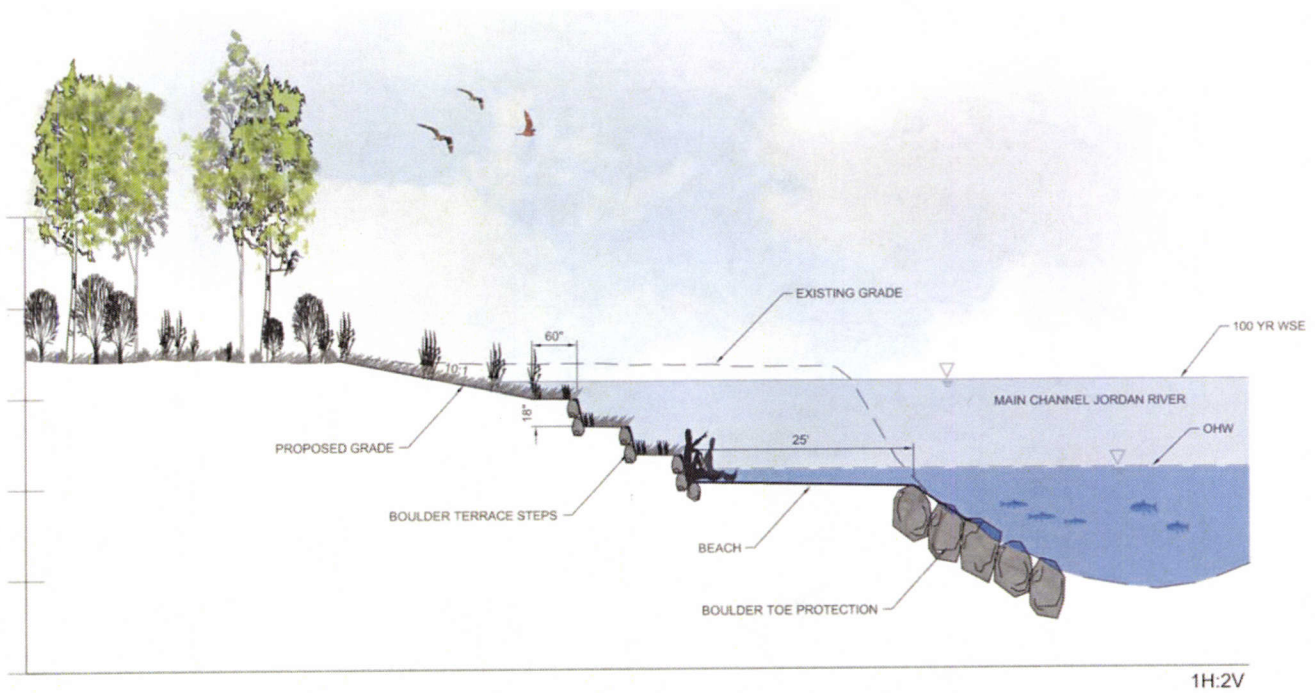


1H:4V

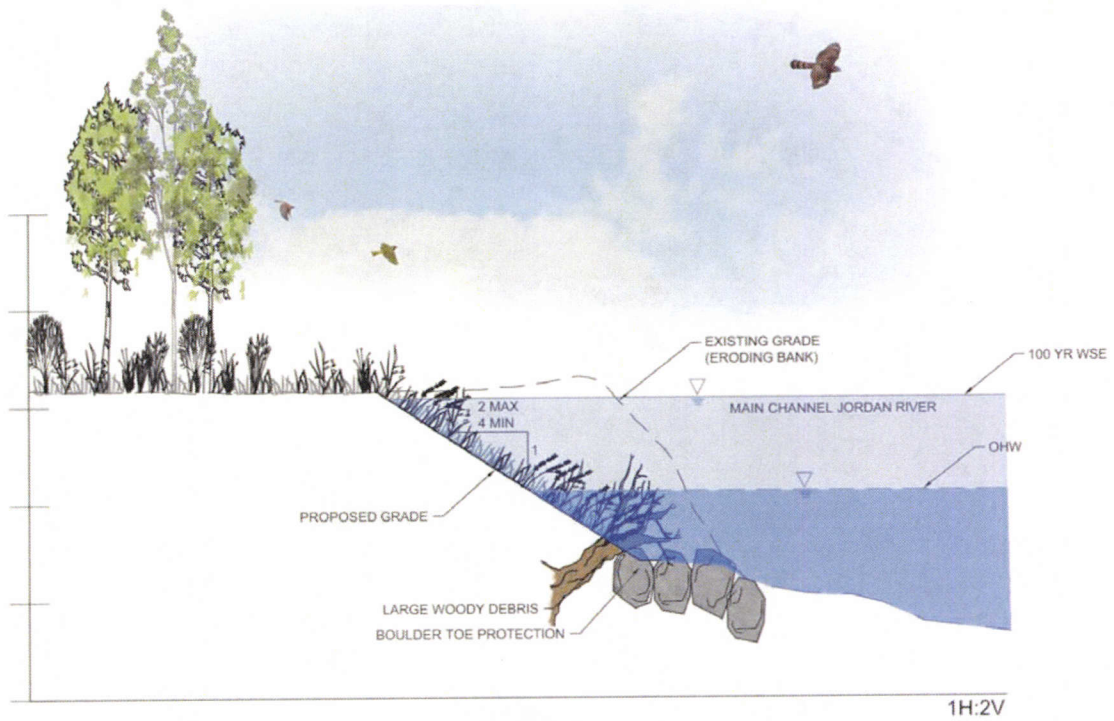
Perched Channel with Small Floodplain

Mid Range Alternative – Typical Channel Section

Big Bend Habitat Restoration Project – Sample Cross Sections



Confluence and Bank Repair - Typical Section 1



Confluence and Bank Repair - Typical Section 2



PRELIMINARY

Journal of Interpersonal Violence


**WEST
JORDAN**

City of West Jordan
Capital Projects Group
6000 S. Redwood Rd.
West Jordan, UT 84086
(801) 565-5049



ALTERNATIVES ANALYSIS - NOT FOR CONSTRUCTION

Project	Big Bend WJ
Date	April 8, 2015
Scale	1" = 100' (Not to Scale)
Sheet	D2



City of West Jordan
 1500 S. 2000 W. Jordan, UT 84095
 (801) 562-5043

1	DESIGN UPDATES
2	REVISIONS/UPDATES
3	DATE

Big Bend Habitat Restoration Project Alt 2 - Site Grading Perched Channel Option

PRELIMINARY



 <p>City of Amman, Jordan Capital Projects Sector Amman Municipality Water services, UT 6611, Safat 5043</p>	<p>EXHIBIT TITLE, DATE AND ADDRESS</p>	<p>EXHIBIT NO.</p>	<p>EXHIBIT DATE</p>	<p>EXHIBIT ADDRESS</p>	<p>EXHIBIT NO.</p>	<p>EXHIBIT DATE</p>	<p>EXHIBIT ADDRESS</p>	<p>EXHIBIT NO.</p>	<p>EXHIBIT DATE</p>	<p>EXHIBIT ADDRESS</p>
 <p>City of Amman, Jordan Capital Projects Sector Amman Municipality Water services, UT 6611, Safat 5043</p>	<p>EXHIBIT TITLE, DATE AND ADDRESS</p>	<p>EXHIBIT NO.</p>	<p>EXHIBIT DATE</p>	<p>EXHIBIT ADDRESS</p>	<p>EXHIBIT NO.</p>	<p>EXHIBIT DATE</p>	<p>EXHIBIT ADDRESS</p>	<p>EXHIBIT NO.</p>	<p>EXHIBIT DATE</p>	<p>EXHIBIT ADDRESS</p>
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PROJECT: Big Bend Restoration Project

Ver 1 -Date: April 6, 2015

Alternatives Analysis - Cost Opinion**Alternative 1 - Meander Channel w/ Full Floodplain. Full Fishery and Grading. Higher Cost Icon Site. 9000 S Access Road.**

Description	Quantity	Unit	Unit Cost	Total Cost	Totals	Notes / Assumptions
Site Preparation						
Mobilization/Demobilization/Bonding/Insurance	1	LS	\$488,724	\$488,724		Assume 8 percent of total costs
Construction Survey and Stake	1	LS	\$40,000	\$40,000		
Erosion and Sediment Control - Entire Site	1	LS	\$122,181	\$122,181		Assume 2 percent of total costs
Care of Water / Temporary Water Management	1	LS	\$122,181	\$122,181		Assume 2 percent of total costs
Traffic Control	1	LS	\$15,000	\$15,000		
				Sub Total:	\$788,086	
Meander Channel Incl Diversion and Confluence Areas						
Excavation and Haul Offsite	93,200	CY	\$16	\$1,491,200		Assumed distant site from Section 4 of Report
Stream Boulders	70	EA	\$100	\$7,000		
Large Woody Debris	70	EA	\$750	\$52,500		
Streambed Alluvium	13,000	CY	\$10	\$130,000		Assume that alluvium is from existing berms
Diversion Structure and Associated Work	1	LS	\$179,669	\$179,669		Div Alt 2 - See separate sheet for breakdown
Confluence Area and Associated Work	1	LS	\$132,282	\$132,282		See separate sheet for breakdown
				Sub Total:	\$1,992,652	
Habitat Restoration Area						
Excavation and Embankment	37,500	CY	\$10	\$375,000		Large Berm: excavation from new river channel
Primary Trail	1,400	LF	\$15	\$21,000		trail on large berm
Wood Post and Rail Fence	2,000	LF	\$15	\$30,000		
Native Wetland Seed Mix	11	ACRE	\$3,000	\$33,000		
Native Upland Seed Mix	27	ACRE	\$2,000	\$54,000		
Wood Fiber Mulch	38	ACRE	\$2,500	\$95,000		
Trees	250	EA	\$300	\$75,000		
Shrubs	400	EA	\$40	\$16,000		
Irrigation Pump	1	EA	\$45,000	\$45,000		Pump, filters, power, intake box
Irrigation System	38	ACRE	\$7,500	\$285,000		Controller, valves, pipe, heads
				Sub Total:	\$1,029,000	
Urban Fishery Facility and Paths						
Excavation and Embankment	46,300	CY	\$10	\$463,000		Pond excavation, berm embankment
Primary Trail	350	LF	\$15	\$5,250		does not include trail on large berm
Secondary Trail	5,100	LF	\$7	\$35,700		
Boardwalk	150	LF	\$300	\$45,000		
Fishing Pier	90	LF	\$350	\$31,500		
Canal Diversion/Stream Creation	1,200	LF	\$60	\$72,000		
Fish Cleaning Station	1	EA	\$15,000	\$15,000		
Vault Restroom	1	EA	\$50,000	\$50,000		
Bench	5	EA	\$1,200	\$6,000		
Native Wetland Seed Mix	2	ACRE	\$3,000	\$6,000		
Native Upland Seed Mix	15	ACRE	\$2,000	\$30,000		
Wood Fiber Mulch	17	ACRE	\$2,500	\$42,500		
Trees	200	EA	\$250	\$50,000		
Shrubs	500	EA	\$40	\$20,000		
Irrigation Pump	1	EA	\$45,000	\$45,000		Pump, filters, power, intake box
Irrigation System	17	ACRE	\$7,500	\$127,500		Controller, valves, pipe, heads
				Sub Total:	\$1,044,450	
9000 S Access Road and Parking Area						
Roadway Excavation	2,400	CY	\$15	\$36,000		
Traffic Control	1	LS	\$50,000	\$50,000		
Untreated Base Course	3,900	TONS	\$25	\$97,500		
Asphalt Concrete	3,200	TONS	\$95	\$304,000		
Stripping	100	GAL	\$35	\$3,500		
Guardrail	775	LF	\$25	\$19,375		
Guardrail Terminals	2	EA	\$3,000	\$6,000		
Fencing	2,100	LF	\$15	\$31,500		
Gates	1	EA	\$1,500	\$1,500		
Drainage Features	1	LS	\$5,000	\$5,000		
Signage	1	LS	\$2,500	\$2,500		
Traffic Control	1	LS	\$50,000	\$50,000		
9000 S Access Road Design and Permitting	1	LS	\$100,000	\$100,000		
				Sub Total:	\$706,875	
Icon Site and Structure						
Icon Structure	1	LS	\$547,988	\$547,988		See separate sheet for breakdown
				Sub Total:	\$547,988	
ITEMIZED CONSTRUCTION SUBTOTAL				\$6,109,051	\$6,109,051	
Contingency (15%)				\$916,358		
CONSTRUCTION WITH CONTINGENCY				\$7,025,408		
Water Rights				\$100,000		
Project Site - Final Engineering and Permitting (13%)				\$913,303		
Construction Management (7%)				\$491,779		
TOTAL COST				\$8,530,490		

PROJECT: Big Bend Restoration Project
Alternatives Analysis - Cost Opinion

Ver 1 -Date: **April 6, 2015**

Alternative 2 - Perched Channel w/ Small Floodplain. Full Fishery and Grading. Lower Cost Icon Site. Parking at 8600.

Description	Quantity	Unit	Unit Cost	Total Cost	Totals	Notes / Assumptions
Site Preparation						
Mobilization/demobilization/Bonding/Insurance	1	LS	\$282,392	\$282,392		Assume 8 percent of total costs
Construction Survey and Stake	1	LS	\$40,000	\$40,000		
Erosion and Sediment Control - Entire Site	1	LS	\$61,773	\$61,773		Assume 1.75 percent of total costs
Traffic Control	1	LS	\$5,000	\$5,000		
Care of Water / Temporary Water Management	1	LS	\$52,949	\$52,949		Assume 1.5 percent of total costs
				Sub Total:	\$442,114	
Perched Channel incl Diversion and Confluence Areas						
Grade Control Rock	2,000	TONS	\$100	\$200,000		
Stream Boulders	70	EA	\$100	\$7,000		
Large Woody Debris	30	EA	\$750	\$22,500		
Streambed Alluvium	10,872	CY	\$10	\$108,724		Assume that alluvium is from existing berms
Diversion Structure and Associated Work	1	LS	\$179,669	\$179,669		Div Alt 2 - See separate sheet for breakdown
Confluence Area and Associated Work	1	LS	\$132,282	\$132,282		See separate sheet for breakdown
				Sub Total:	\$650,176	
Habitat Restoration Area						
Excavation and Embankment	31,000	CY	\$10	\$310,000		Large Berm: excavation from new river channel
Primary Trail	1,400	LF	\$15	\$21,000		trail on large berm
Wood Post and Rail Fence	2,000	LF	\$15	\$30,000		
Native Wetland Seed Mix	4	ACRE	\$3,000	\$12,000		
Native Upland Seed Mix	34	ACRE	\$2,000	\$68,000		
Wood Fiber Mulch	38	ACRE	\$2,500	\$95,000		
Trees	250	EA	\$300	\$75,000		
Shrubs	400	EA	\$40	\$16,000		
Irrigation Pump	1	EA	\$45,000	\$45,000		Pump, filters, power, intake box
Irrigation System	38	ACRE	\$7,500	\$285,000		Controller, valves, pipe, heads
				Sub Total:	\$957,000	
Urban Fishery Facility and Paths						
Excavation and Embankment	46,300	CY	\$10	\$463,000		Pond excavation, berm embankment
Primary Trail	350	LF	\$15	\$5,250		does not include trail on large berm
Secondary Trail	5,100	LF	\$7	\$35,700		
Boardwalk	150	LF	\$300	\$45,000		
Fishing Pier	90	LF	\$350	\$31,500		
Canal Diversion/Stream Creation	1,200	LF	\$60	\$72,000		
Fish Cleaning Station	1	EA	\$15,000	\$15,000		
Vault Restroom	1	EA	\$50,000	\$50,000		
Bench	5	EA	\$1,200	\$6,000		
Native Wetland Seed Mix	2	ACRE	\$3,000	\$6,000		
Native Upland Seed Mix	15	ACRE	\$2,000	\$30,000		
Wood Fiber Mulch	17	ACRE	\$2,500	\$42,500		
Trees	200	EA	\$250	\$50,000		
Shrubs	500	EA	\$40	\$20,000		
Irrigation Pump	1	EA	\$45,000	\$45,000		Pump, filters, power, intake box
Irrigation System	17	ACRE	\$7,500	\$127,500		Controller, valves, pipe, heads
				Sub Total:	\$1,044,450	
Parking Lot off 8600 (not shown in plans)						
Traffic Control	1	LS	\$5,000	\$5,000		
Untreated Base Course	297	TONS	\$25	\$7,419		
Asphalt Concrete	249	TONS	\$95	\$23,652		
Stripping	3	GAL	\$35	\$91		
Parking Lot Design	1	LS	\$10,000	\$10,000		
				Sub Total:	\$46,162	
Icon Site and Structure						
Icon Structure	1	LS	\$390,000	\$390,000		See separate sheet for breakdown
				Sub Total:	\$390,000	
ITEMIZED CONSTRUCTION SUBTOTAL				\$3,529,901	\$3,529,901	
Contingency (15%)				\$529,485		
CONSTRUCTION WITH CONTINGENCY				\$4,059,386		
Water Rights				\$100,000		
Project Site - Final Engineering and Permitting (13%)				\$527,720		
Construction Management (7%)				\$284,157		
TOTAL COST				\$4,971,264		

PROJECT: Big Bend Restoration Project
Alternatives Analysis - Cost Opinion

Ver 1 -Date: **April 6, 2015**

Alternative 3 - No Channel Diversion. Smaller Fishery and Grading. No Icon Site. Parking at 8600.

Description	Quantity	Unit	Unit Cost	Total Cost	Totals	Notes / Assuptions
Site Preparation						
Mobilization/demobilization/Bonding/Insurance	1	LS	\$164,799	\$164,799		Assume 8 percent of total costs
Construction Survey and Stake	1	LS	\$30,000	\$30,000		
Erosion and Sediment Control - Entire Site	1	LS	\$30,900	\$30,900		Assume 1.5 percent of total costs
Traffic Control	1	LS	\$5,000	\$5,000		
Care of Water / Temporary Water Management	1	LS	\$20,600	\$20,600		Assume 1 percent of total costs
				Sub Total:	\$251,299	
Effemral Channel incl Diversion and Confluence Areas						
Grade Control Rock	350	tons	\$100	\$35,000		
Stream Boulders	0	EA	\$100	\$0		
Large Woody Debris	0	EA	\$750	\$0		
Streambed Alluvium	0	CY	\$10	\$0		
Confluence Area and Associated Work	1	LS	\$132,282	\$132,282		See separate sheet for breakdown
				Sub Total:	\$167,282	
Habitat Restoration Area						
Excavation and Embankment	5,000	CY	\$10	\$50,000		Large Berm: excavation from new river channel
Primary Trail	1,400	LF	\$15	\$21,000		trail on large berm
Wood Post and Rail Fence	2,000	LF	\$15	\$30,000		
Native Wetland Seed Mix	11	ACRE	\$3,000	\$33,000		
Native Upland Seed Mix	27	ACRE	\$2,000	\$54,000		
Wood Fiber Mulch	38	ACRE	\$2,500	\$95,000		
Trees	250	EA	\$300	\$75,000		
Shrubs	400	EA	\$40	\$16,000		
Irrigation Pump	1	EA	\$45,000	\$45,000		Pump, filters, power, intake box
Irrigation System	38	ACRE	\$7,500	\$285,000		Controller, valves, pipe, heads
				Sub Total:	\$704,000	
SMALL Urban Fishery Facility and Paths						
Excavation and Embankment	30,000	CY	\$10	\$300,000		Pond excavation, berm embankment
Primary Trail	350	LF	\$15	\$5,250		does not include trail on large berm
Secondary Trail	6,500	LF	\$7	\$45,500		
Boardwalk	150	LF	\$300	\$45,000		
Fishing Pier	90	LF	\$350	\$31,500		
Canal Diversion/Stream Creation	1,200	LF	\$60	\$72,000		
Fish Cleaning Station	1	EA	\$15,000	\$15,000		
Vault Restroom	1	EA	\$50,000	\$50,000		
Bench	5	EA	\$1,200	\$6,000		
Native Wetland Seed Mix	2	ACRE	\$3,000	\$6,000		
Native Upland Seed Mix	15	ACRE	\$2,000	\$30,000		
Wood Fiber Mulch	17	ACRE	\$2,500	\$42,500		
Trees	200	EA	\$250	\$50,000		
Shrubs	500	EA	\$40	\$20,000		
Irrigation Pump	1	EA	\$45,000	\$45,000		Pump, filters, power, intake box
Irrigation System	17	ACRE	\$7,500	\$127,500		Controller, valves, pipe, heads
				Sub Total:	\$891,250	
Parking Lot off 8600 (not shown in plans)						
Traffic Control	1	LS	\$5,000	\$5,000		
Untreated Base Course	297	TONS	\$25	\$7,419		
Asphalt Concrete	249	TONS	\$95	\$23,652		
Stripping	3	GAL	\$35	\$91		
Parking Lot Design	1	LS	\$10,000	\$10,000		
				Sub Total:	\$46,162	
ITEMIZED CONSTRUCTION SUBTOTAL				\$2,059,993	\$2,059,993	
Contingency (15%)				\$308,999		
CONSTRUCTION WITH CONTIGENCY				\$2,368,992		
Water Rights				\$100,000		
Project Site - Final Engineering and Permitting (13%)				\$307,969		
Construction Management (7%)				\$165,829		
TOTAL COST				\$2,942,791		